

# THE FEEDING HABITS OF *STEGOMYIA* *CALOPUS*, MEIGEN

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It has been stated by Marchoux and Simond (1906) that *Stegomyia calopus*, under normal conditions, that is, while at liberty, ceases to bite man during the day after the first six or eight days of its existence in the perfect state, but that after the eighth day it is sometimes observed to bite towards 6 p.m. before nightfall. They also state that yellow fever is not contracted during the day, but only 'à la chute du jour où pendant la nuit.' 'Nous avons en effet constaté expérimentalement qu'à la période de sa vie où il possède le pouvoir infectant, le *Stegomyia fasciata* en liberté ne cherche pas à piquer l'homme entre 7 heures du matin et 5 h.  $\frac{1}{2}$  du soir. La transmission est donc nocturne.' This they held to account for the fact that the inhabitants of Petropolis when visiting Rio only during the day did not contract yellow fever. In their experiments, however, the mosquitoes were confined in a screened room. Seidelin and Connal (1914) and Macfie (1915-16) showed that *S. calopus* would bite at any hour irrespective of age, when in captivity.

According to Marchoux and Simond (1906) the minimum interval between the date on which *S. calopus* acquires the infection and that on which it becomes infective is twelve days.

The following experiments were undertaken with a view to investigating the feeding habits under as natural conditions as possible. They were carried out in Manáos.

All the mosquitoes were hatched in the laboratory and kept in wire gauze cages, males being always present. Each female was removed from the stock cage in a glass tube and allowed to feed to repletion on one of us during the hours of daylight. After feeding they were 'marked' by amputating the hindlegs through the tibiae,

but in a few instances some part of the femur was accidentally removed. This method of 'marking' is considered sufficiently distinctive as wild specimens of *Stegomyia*, observed by us at other times, have never shown this mutilation. After feeding they were kept for not less than fourteen days, sugar being available as food, and during the last two or three days of this period were again given an opportunity to bite, also during daylight. They were then released under the conditions described below and during the four succeeding days, in the place where they had been released, the mosquitoes biting us were observed for one hour each during the day and night. The observations at night were made by electric light. No unmarked females were released along with the 'marked.'

Three experiments were carried out.

*Experiment I.* Date: 23rd March to 16th April, 1921. Sixty female *Stegomyia* were fed a first time and 'marked' between 23rd and 28th March. Of these thirty-three survived, and were offered a second feed on the 11th and 12th of April; thirty fed and three refused to feed. Two escaped after feeding. The remaining thirty-one females along with twelve males were released at 7 p.m. on the 14th April in a first-floor bedroom of about 14 ft. by 12 ft. by 10 ft. This room was in use, the occupant using a mosquito net at night; it had two unscreened windows which were constantly open, and the mosquitoes also had free access to other parts of the house. A glass jar containing water was placed in the room, but no eggs were deposited in it up to the 23rd April. 'Marked' mosquitoes were released after feeding.

Observations were made as follows:—

Date ... ..	April ...	15		16		17		18	
Time ... ..	P.M. ...	12.30 to 1.30	8.30 to 9.30	12.30 to 1.30	8.30 to 9.30	12.30 to 1.30	8.30 to 9.30	12.30 to 1.30	8.30 to 9.30
<i>S. calopus</i> biting ...	'Marked'...	3	0	2	0	0	0	0	0
	Unmarked...	3	0	0	0	0	0	0	0

NOTE.—In addition, one of us was bitten by a 'marked' mosquito at 7.30 a.m. on the 15th.

*Experiment II.* Date: 5th to 29th April, 1921. Sixty female *Stegomyia* were fed a first time and 'marked' between the 5th and 11th April. Of these twenty-three survived. They were offered a second feed on the 23rd and 24th April; twenty-one fed and two refused. They were released with about twelve males at 5 p.m. on the 25th in a first-floor bedroom in a different part of the town from Experiment I. This room was about 20 ft. by 14 ft. by 12 ft. in size, was in use, the occupant using a mosquito net at night, had four large windows constantly open, and the mosquitoes had free access to other parts of the house.

Observations were made as follows:—

Date ...	April ...	25	26		27		28		29
Time ...	P.M. ...	8-9	12-1	8-9	12-1	8-9	12-1	8-9	12-1
<i>S. calopus</i> biting ...	'Marked'...	o	0	o	0	o	0	o	0
	Unmarked...	o	o	2	o	o	o	III	o

*Experiment III.* Date: 1st May to 3rd June, 1921. Seventy female *Stegomyia* were fed a first time and 'marked' between 1st and 14th May. Of these fifty survived. Offered second feed on 28th, 29th and 30th May; forty-three fed and seven refused. These fifty were released along with about twelve males at 3 p.m. on the 30th May in a ground-floor room behind the laboratory, about 17 ft. by 10 ft. by 15 ft. in size and opening directly to the outside. This room had one window, the upper part of which was imperfectly screened and the lower part had wooden slats, the apertures between these allowing free passage to mosquitoes. The door was open all day and for one hour at night when observations were made. Otherwise the room was not used at night. A jar of water was placed in the room, and some eggs were found on 31st May. 'Marked' mosquitoes were released after feeding.

Observations were made as follows:—

Date ...	May	3 <sup>o</sup>	3 <sup>1</sup>	June 1	2	3		
Time ...	P.M.	8.30 to 9.30	1—2	8.30 to 9.30	1—2	8.30 to 9.30	1—2	1—2
<i>S. calopus</i> biting	'Marked'...	3	7	3	2	0	1	0
	Unmarked...	1	4	4	1	3	0	5

NOTE.—Each of us was bitten in the laboratory by a 'marked' *Stegomyia* on the 7th June, one at 9 a.m. and the other at 4 p.m.

### SUMMARY

Experiment I. Thirty-one 'marked' female *Stegomyia* were released at night not less than fourteen days after their first blood meal. During the succeeding four days, five 'marked' and three unmarked fed during daylight. None were observed to feed at night.

Experiment II. With the exception of two unmarked *Stegomyia*, none were observed to feed.

Experiment III. Fifty 'marked' female *Stegomyia* were released during daylight not less than fourteen days after their first blood meal. During the succeeding four days, ten 'marked' and ten unmarked fed during daylight, and six 'marked' and eight unmarked fed during the night.

### CONCLUSION

*Stegomyia calopus* females will bite either by day or night, over fourteen days after their first blood meal, while under no artificial restraint and having opportunities of selecting day or night for feeding.

### REFERENCES

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